

WIRELESS BROADBAND OVER LICENSE-EXEMPT SPECTRUM: REGULATORY ISSUES AND OPPORTUNITIES

A Presentation by the License-Exempt Alliance

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FACTS ABOUT THE LEA

- **NATIONWIDE COALITION OF WIRELESS INTERNET SERVICE PROVIDERS (WISPs) AND EQUIPMENT VENDORS THAT UTILIZE LICENSE-EXEMPT SPECTRUM**
- **MISSION: TO ACHIEVE REGULATORY REFORM THAT WILL PROMOTE DELIVERY OF WIDE-AREA, BROADBAND SERVICE IN THE LICENSE-EXEMPT BANDS, WITHOUT INCREASING RISK OF INTERFERENCE TO LICENSED USERS**

KEY TERMS

- **WIRELESS BROADBAND:** Wireless delivery of high-speed Internet/IP services over a geographic range to unrelated set of users. May be 802.11b or other proprietary technologies
- **WIRELESS LAN:** Wireless connection of specific nodes, local or remote, to form a shared, common LAN. Usually 802.11b
- **HOTSPOTS:** Horizontal distribution of 802.11b WLAN for broadband in small, strategic pockets.

THE VALUE OF LICENSE-EXEMPT BROADBAND SERVICE

- **Broadband is an economic development issue. Unlike “hotspots,” whose value is to the operator, user, and/or retail storefront provider, license-exempt wireless broadband has a value chain that includes the operator and the total community of homes, businesses, schools, etc. within the cell footprint.**

LICENSE-EXEMPT SPECTRUM

- **902-928 MHz**
 - Best Propagation Characteristics – Penetrates Foliage, Buildings, etc.
 - Protected by “Safe Harbor” Rule (Section 90.361)
 - Limitations: Only 26 MHz of Spectrum, Must Share with Licensed Users, No Allowances for Higher Antenna Gain
- **ISM Band (2400-2483.5 MHz)**
 - Adequate Propagation Characteristics, Equipment is Widely Available, Higher Antenna Gain Permitted Under Certain Circumstances
 - Limitations: No “safe harbor” rule; interference from indoor ISM devices; power limitations hinder service in rural areas
- **UNII (5.15-5.35, 5.475-5.725 and 5.725-5.825 GHz)**
 - Spectrum is relatively free and clear compared to the 2.4 GHz band
 - Propagation characteristics less favorable, but can achieve higher throughput; also, less “clutter” from non-communications devices
 - Limitations: only 100 MHz available for higher power operations

KEY OPERATIONAL FACTORS

- License-exempt broadband providers are scaling to wide-area, integrated systems that use different frequency bands and serve different demographics within the same network – from an operational perspective, rural/non-rural distinction is relevant only vis-à-vis choice of technology for delivering service.
- The need to optimize networks is necessary to improve building penetration and NLOS service in non-rural areas, and extend service to rural areas – many operators need both.

REGULATORY ISSUES

- **Need More Spectrum That is Suitable for Outdoor, Non-Line of Sight Wireless Broadband Service**
 - More spectrum is needed to overcome line-of-sight requirements above 2 GHz
 - Possibility of spectral congestion in existing bands

REGULATORY ISSUES (cont'd)

- **The FCC Must Encourage More Rational, Efficient Use of Spectrum for Outdoor Broadband Service**
 - FCC's historical distinction between PTP and PTMP in Part 15 is creating "piecemeal" regulatory approach that agency has been trying to avoid (ET Docket No. 03-201). Rather than expand definition of PTP on an ad hoc basis, the Commission should focus on reevaluating power limits for PTMP operations (ET Docket No. 03-108).

REGULATORY ISSUES (cont'd)

- FCC has raised issue of raising license-exempt power limits in four separate rulemakings (ET Docket No. 03-201, ET Docket No. 03-108, 3650-3700 MHz NPRM, and TV Broadcast Bands NPRM). There are inconsistencies in the various proposals that, if incorporated into the rules, could make it difficult for operators to design integrated wide-area networks with consistent, always-on quality of service.
- FCC must remember that multiple license-exempt bands may be deployed within the same network to provide the same broadband service. Unnecessary inconsistencies in the rules applicable to those bands therefore should be avoided wherever possible.

REGULATORY ISSUES FOR WISPs (cont'd)

- **FCC Must Encourage “Best Practices” Policy in License-Exempt Spectrum**
- **Outdoor license-exempt systems are fast becoming part of the nation’s telecommunications infrastructure. FCC policies must promote construction of those systems to the highest standards.**